

BOOK REVIEW

Kinetics of Nonhomogeneous Processes, Ed. G.R. Freeman (John Wiley and Sons, New York, Chichester, 1987); Price: £95.50

What are Nonhomogeneous Processes? The preface lists a striking range: percolation, network-forming polymerization, the growth of cancer, photoconductors, polymer welding, and chemical reactions oscillating in space or time. More importantly, the book claims new relationships between these diverse phenomena. Further, as its subtitle (“A Practical Introduction for Chemists, Biologists, Physicists and Materials Scientists”) implies, it is written as a handbook for new graduate students or specialized upper-year undergraduates.

As is clear, it isn't a book which fits preconceived subject areas. Those interested in radiation effects will find several substantial parts of interest, with chapters on ionization and charge separation, especially in liquids; on radiation track structure and on radiation chemistry, on radiation effects in metals and alloys, and on models of cellular radiation action. Microbiologists and cell biologists will find chapters in their fields, and the book contains too chapters on polymer melts, electron-hole transport and recombination in amorphous media, and on chemical waves.

Each of the chapters seems well done (I felt the short opening chapter on fractals might have been better incorporated into the two later chapters which use the concept) with a clear presentation, though perhaps still

at a level rather too optimistic for undergraduates. The diagrams are well chosen, and the tables and appendices useful. The quality is very good, but one error took my breath away. The editor himself on page 45 describes the “Landau polaron (a term long rare) and says “there seems to be no unambiguous evidence that it exists in any material”. This could not be less true; Kanizig's clear spin resonance evidence for KCl dates from 1957. Since then, many authors have identified (any many more postulated) small polarons in other systems, including many halides and oxides. However, this is clearly an isolated blind spot. Readers of the *Journal of Nuclear Materials* would find plenty of interesting reading, for about half the book is on radiation effects in one form or another. What they may find harder is to identify the “gel point” (in the words of the preface) which links them to the thermal processes which dominate the remainder. They will certainly be stimulated, but some of the illumination the readers would have to find themselves.

Dr. A.M. Stoneham

*Theoretical Physics Division
Harwell Laboratory
Didcot, Oxon OX11 0RA
United Kingdom*